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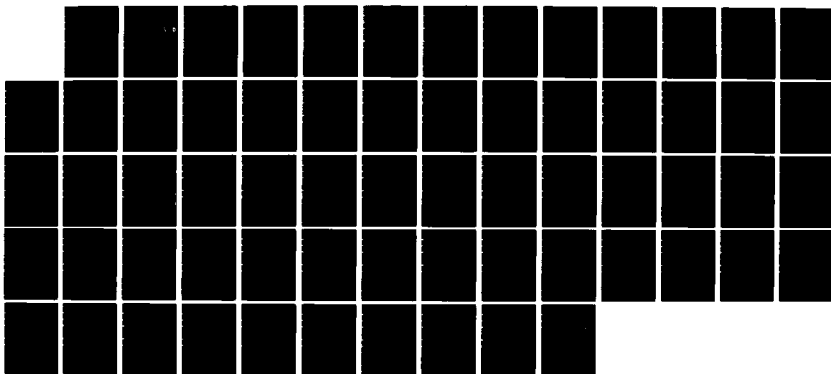
AIR FORCE INTEGRATED READINESS MEASUREMENT SYSTEM
(AFIRMS) MINUTES PROGRAM (U) SOFTECH INC FALLS CHURCH
VA* 21 AUG 85 F49642-83-C-0022

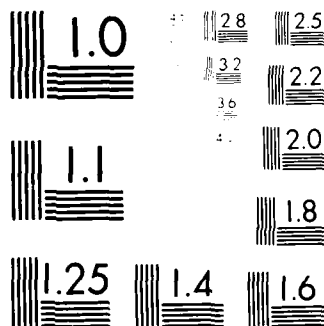
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SOFTech

SofTech, Inc.

5201 Leesburg Pike
Suite 500
Falls Church, VA 22041-3203

(703) 941-1312

AIR FORCE INTEGRATED READINESS MEASUREMENT SYSTEM (AFIRMS)

MINUTES

PROGRAM MANAGEMENT OFFICE
SYSTEM/SUBSYSTEM STATUS REVIEW
19 July 1985

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AUG 04 1986
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AD-A170 519

Prepared by

SofTech, Inc.
5201 Leesburg Pike, Suite 500
Falls Church, VA 22041

21 August 1985

Prepared for

United States Air Force
Contract No. F49642-83-C-0022

CDRL 0043

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Ross W. Simmons

Ross W. Simmons
AFIRMS Program Manager

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INTRODUCTION

The Quarterly Management Review of the Air Force Integrated Readiness Measurement System (AFIRMS) Learning Prototype Phase (LPP) was presented to the Program Management Office, DSDO-XO, and Office of Primary Responsibility (OPR), HQ USAF/XOOIM on 19 July 1985. The review was held to discuss the current status and results of the LPP which concluded 6 June 1985, and the efforts for the period 7 June 1985 through 30 September 1985. These minutes are provided to document the items discussed during the review.

ADMINISTRATIVE DATA

The review was conducted in Building 888, Gunter AFS, Alabama. Mr. William Stevenson, DSDO/DM, chaired the review with Colonel John Burch, DSDO/XO, AF PMO. A list of attendees is provided at Attachment A. The agenda is at Attachment B. Briefing slides are included as Attachment C, System Requirements Review (SRR).

REVIEW

Opening remarks were made by Colonel John Burch who introduced Mr. Ross Simmons, AFIRMS Program Manager, SofTech, Inc. Mr. Simmons introduced SofTech personnel in attendance and presented material in the review covering the LPP through 6 June 1985. Mr. Jim Hooper, Information Systems Department Director, presented a prototype lessons learned review, the SofTech 7 June 1985 through 30 September 1985 tasking, and an overall summary.

Discussion of the documentation included the scope for worldwide implementation and clarification of the level of detail in the Specifications, Implementation Plan, Economic Analysis, and other documents. Intended role for worldwide implementation to include their use as currently published or modifications needed for the Air Force's next step toward AFIRMS operational implementation was also discussed. The documents with a worldwide scope are the Functional Description, Evolutionary Implementation Plan, Economic Analysis, Systems Specifications, and Data Requirements Document. The Subsystem and Database specification documents (for HQ USAF, MAJCOM, and wing)

are oriented to USAF requirements in Europe specifically and tactical fighter/reconnaissance units in general. Likewise, the Transforms and Models as well as the Product Descriptions documents are USAFE oriented. The Evolutionary Implementation Plan provides for identification of specific hardware and facilities requirements as well as additional software needs or refinements, as necessary, during the accomplishment of each AFIRMS implementation block. The PMO and OPR intention is to use the documents as a foundation, to be expanded as needed to satisfy specific MAJCOM and HQ USAF requirements. For example, preliminary analysis efforts for the Military Airlift Command (MAC) and the Strategic Air Command (SAC) requirements and applicable assessment metrics, are initial expansion steps underway in the operational decision phase at this time.

Discussion of lessons learned included strong and weak points of the LPP, management concerns and challenges for implementation of the operational system and dialogue concerning the advisability of developing a program using the prototype approach.

- LPP Accomplishments:

1. Proved the validity of tasking based capability assessment in an integrated resource environment and that sorties are a viable metric for tactical Air Forces operations.
2. Demonstrated the importance of user oriented data quality assurance (system must provide useful tools to data entry level users in order to provide accurate timely data for assessment uses). The LPP validated the fact that if the end user is intimately involved and made a part of the development/requirement process, they will be at ease with use of the system and reduce the learning curve.
3. Controlled Mode Security was successfully tested in prototype environment.

4. Demonstrated through prototype concept the ability to adapt to changing requirements/priorities to better meet user need.
- LPP Shortfalls:
 1. No extensive "full-up," "end-to-end" testing accomplished.
 2. Accomplished only one of three dollars to readiness goals:
 - a) Costing of tasked and short resource requirements - tool was provided;
 - b) Funds allocation "optimizer" - preliminary analysis initiated but not finalized;
 - c) Indexing of tasks resource requirements to budgets - not addressed due to time constraints and other priorities.
 - Management Issues to be Considered During Implementation:
 1. Very long lead times for secure communications links may be required at most locations.
 2. AFIRMS interface/integration with other AF data systems will vary from site to site and could have a schedule impact to either or both programs. Technical approach must be confirmed prior to implementation.
 - Evolutionary Approach Using Prototype Technique Can Assist:
 1. User commitment/involvement.
 2. Concept/operational demonstration use in an effective manner.

- Evolutionary Approach Management Considerations:

1. More difficult to manage, since priorities shift and requirements are not as well defined initially;
2. Users may lose sight of ultimate program goals (i.e. dollars to readiness, capability assessment) and attempt to use prototype effort for additional management information system purposes.

No action items resulted during the open session.

Mr. Stevenson concluded the formal review at approximately 1100 and ended with an Air Force only caucus.

SYSTEM/SUBSYSTEM STATUS REVIEW
Gunter AFS, Alabama
19 July 1984

List of Attendees

NAME	ORGANIZATION	PHONE
Col G. Smith	DSDO/CV	-4724
Col John T. Burch	DSDO/XO	279-4363
Lt Col Gerald D. Dennis	HQ USAF/XOOIM	AV 225-0301
Maj Donald G. Campbell	DSDO/OL-B	AV 289-1921
Maj Robert D. Harrold	DSDO/XOR	-4226
Maj Robert Penny	HQ USAF/XOOIM	697-6693
1Lt Richard T. Naylor	ASPO/PGY	279-3568
SMSgt P. N. Manno	DSDO/DMT	-4360
SSgt Keith A. Oliver	DSDO/OL-B	AV 289-1921
SMSgt Dale Podoll	DSDO/SC	-4772
Mr. Bob Barner	DSDO/DMBS	-4443
Mr. Virgil Decker	DSDO/DMCY	279-4051
Mr. John Evans	SofTech, Inc.	703-931-7372
Mr. Thomas C. Ford	HQ SISC/TFIV-RQ	-4568
Ms. Peggy Gans	DSDO/LGSC	-4507
Mr. Jim Hooper	SofTech, Inc.	703-931-7372
Mr. Dennis Leatherwood	DSDO/SDTD	-3558
Mr. Larry Lloyd	SofTech, Inc.	703-931-7372
Mr. Bill Loerch	DSDO/LGMD	-4372
Mr. Burton G. Parker	SofTech, Inc.	703-931-7372
Mr. Lu Pindell	ASPO/TFN-TSS	-4766
Mr. Ross W. Simmons	SofTech, Inc.	703-931-7372
Mr. William Stevenson	DSDO/DM	279-4820

AGENDA

- OPENING REMARKS
- BACKGROUND
- PROJECT DESCRIPTION
- LEARNING PROTOTYPE PHASE (LPP) REVIEW
 - DESCRIPTION
 - DIRECTION
 - HARDWARE
 - SOFTWARE
 - SECURITY
 - DOCUMENTATION
 - TESTING/TRIALS
 - FINANCIAL
 - ASSESSMENT
- LESSONS LEARNED (PROTOTYPING)
- POST LPP
 - AFIRMS
 - IRIS
 - ABS
- FINANCIAL
- SUMMARY

**AIR FORCE INTEGRATED READINESS
MEASUREMENT SYSTEM
SYSTEM/SUBSYSTEM REQUIREMENTS
REVIEW (SRR)**

**PREPARED FOR
UNITED STATES AIR FORCE
USAF/XOOIM
DSDO/XO
BY
SOFTECH, INC.
19 JULY 1985**

ATTACHMENT C

AGENDA

- OPENING REMARKS
- BACKGROUND
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- LEARNING PROTOTYPE PHASE (LPP) REVIEW
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- LESSONS LEARNED (PROTOTYPING)
- POST LPP
 - AFIRMS
 - IRIS
 - ABS
 - FINANCIAL
 - SUMMARY

BACKGROUND

- AFIRMS PROGRAM INITIATED BY AF/XO 1978
- PROBLEM TO SOLVE
 - RESOURCE COUNTS
 - TIMELINESS
 - SINGLE FUNCTIONAL AREA VIEWPOINT
 - CREDIBILITY
- GENERAL SOLUTION
 - TASKING BASED
 - INTEGRATED LOOK AT RESOURCES
 - TIMELY INFORMATION
 - ACCURATE INFORMATION
 - CONSISTENCY

RESULTS OF INITIAL ANALYSIS

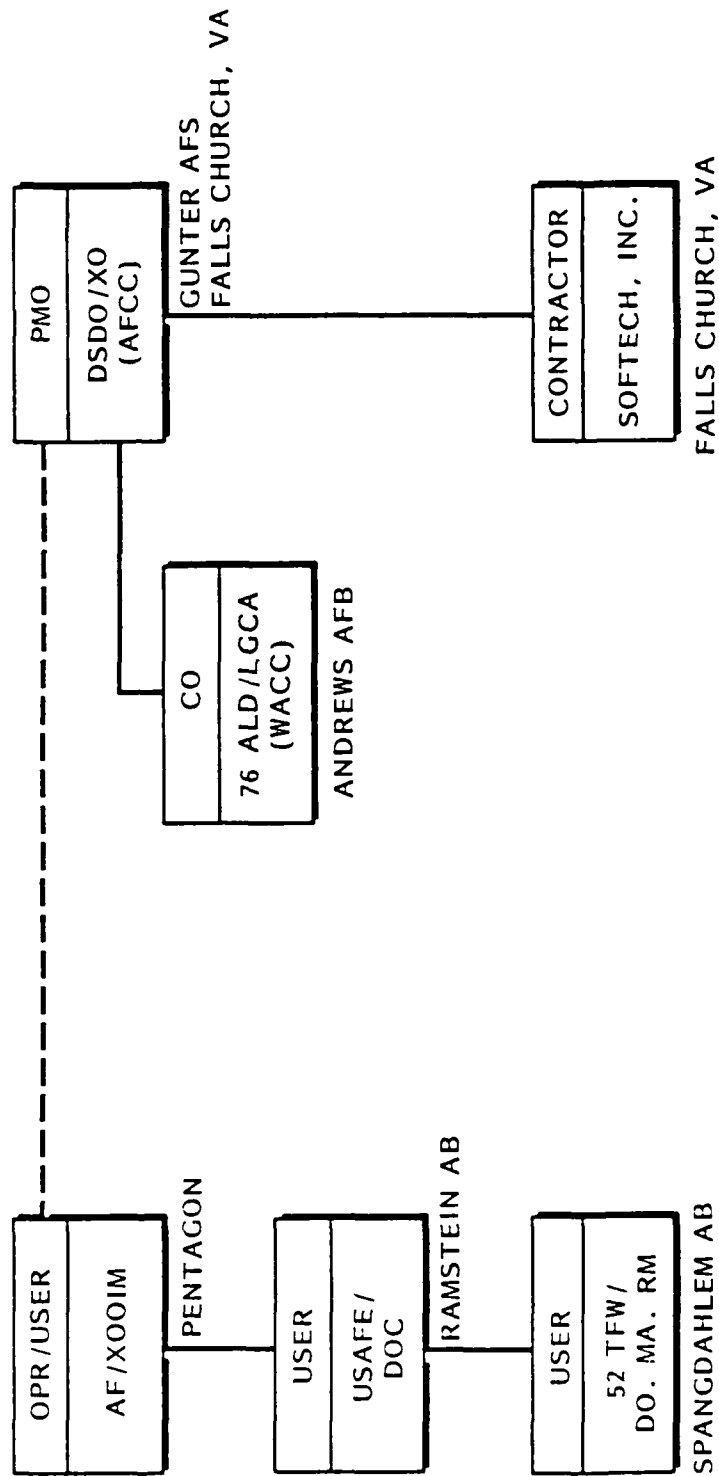
- "THE NEED, PROBLEMS, AND GENERAL SOLUTION DOCUMENTATION"
- USAF AFIRMS FUNCTIONAL AREA REQUIREMENT (FAR) -
NOV 79
- USAF ANNEX TO USAF FAR - AUG 82
- USAF OPERATIONAL MAJOR COMMAND FAR - DEC 82
- DATA AUTOMATION REQUIREMENT - APR 82
- DATA PROJECT DIRECTIVE - FEB 83
- DATA PROJECT PLAN - AUG 83
- DRAFT FUNCTIONAL DESCRIPTION - AUG 83

AFIRMS LEARNING PROTOTYPE PHASE (LPP)

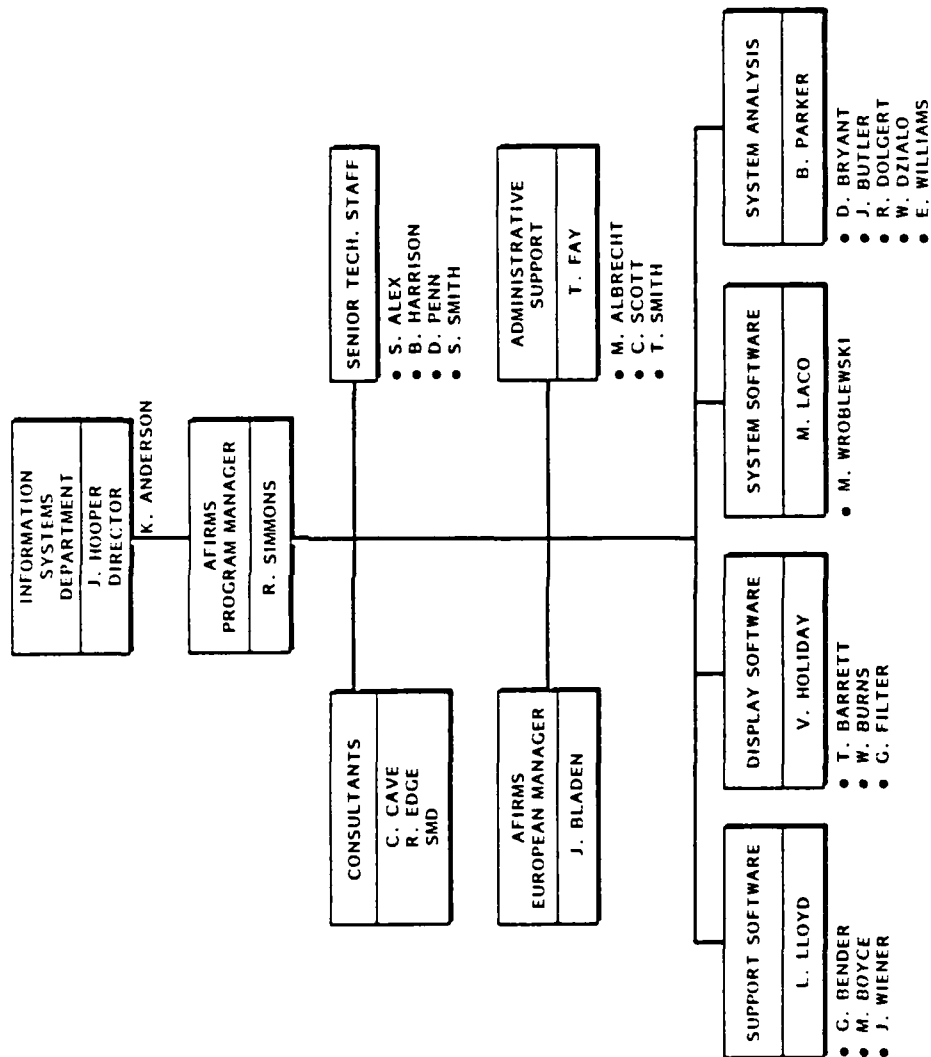
APPROACH

- PURPOSE OF LPP
 - DETERMINE IF OPERATIONAL AFIRMS IS FEASIBLE AND USEFUL
 - VALIDATE AFIRMS CONCEPT
- UNIQUE CHARACTERISTICS OF THE LPP
 - DID NOT FULLY REPRESENT "PROPOSED" OPERATIONAL SYSTEM
 - DID NOT IMPLEMENT ALL OPERATIONAL SEGMENTS
 - DID UTILIZE "OPERATIONAL" USER FOR EVALUATION
- OFF-THE-SHELF TESTBED TECHNOLOGY
 - HARDWARE
 - MOST SOFTWARE
- FINAL KEY DOCUMENTS
 - IMPLEMENTATION PLAN
 - ECONOMIC ANALYSIS
 - FUNCTIONAL DESCRIPTION
 - SPECIFICATIONS

LPP ORGANIZATION



AFIRMS LPP ORGANIZATION



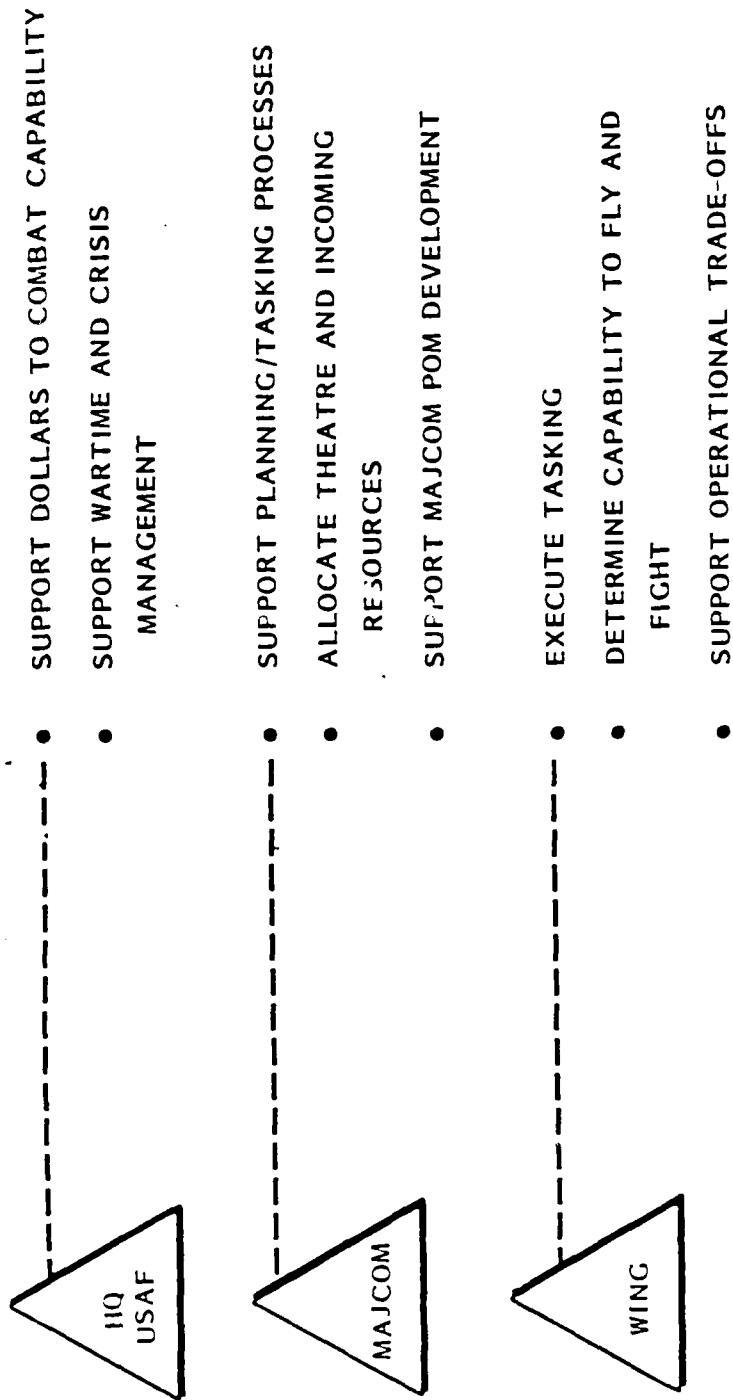
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PROJECT DESCRIPTION

AFIRMS

- ANSWER CONGRESSIONAL MANDATE TO PRODUCE AN AUTOMATED SYSTEM TO LINK DOLLARS TO FORCE READINESS
- DECISION SUPPORT SYSTEM FOR COMBAT CAPABILITY ASSESSMENT (FORCE READINESS AND SUSTAINABILITY) AT THREE LEVELS OF COMMAND: HQ USAF, MAJCOM, WING

COMMAND LEVEL REQUIREMENTS



LEARNING PROTOTYPE PHASE (LPP)

- DETERMINE SPECIFIC USER REQUIREMENTS THROUGH A RAPID PROTOTYPE CAPABILITY
 - STRONG USER INPUT TO SYSTEM DESIGN
 - TAKE ADVANTAGE OF TECHNOLOGICAL ADVANCES FOR OPERATIONAL SYSTEM
- PRODUCE CREDIBLE DOCUMENTATION TO SUPPORT DECISIONS FOR OPERATIONAL AFIRMS
 - FUNCTIONAL DESCRIPTION
 - DATA REQUIREMENTS DOCUMENT
 - SYSTEM SPECIFICATIONS
 - ECONOMIC ANALYSIS
 - EVOLUTIONARY IMPLEMENTATION PLAN

LPP CONTRACT

- DATE OF CONTRACT AWARD - 18 MAR 1983
- LENGTH OF EFFORT - 27 MONTHS
- BASIC PERIOD - 18 MAR 83 - 30 SEP 83
- OPTION PERIOD 1 - 1 OCT 83 - 30 SEP 84
- OPTION PERIOD 2 - 1 OCT 84 - 6 JUN 85
- CURRENT - 6 JUN 85 - 30 SEP 85

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LPP STATUS - DIRECTION

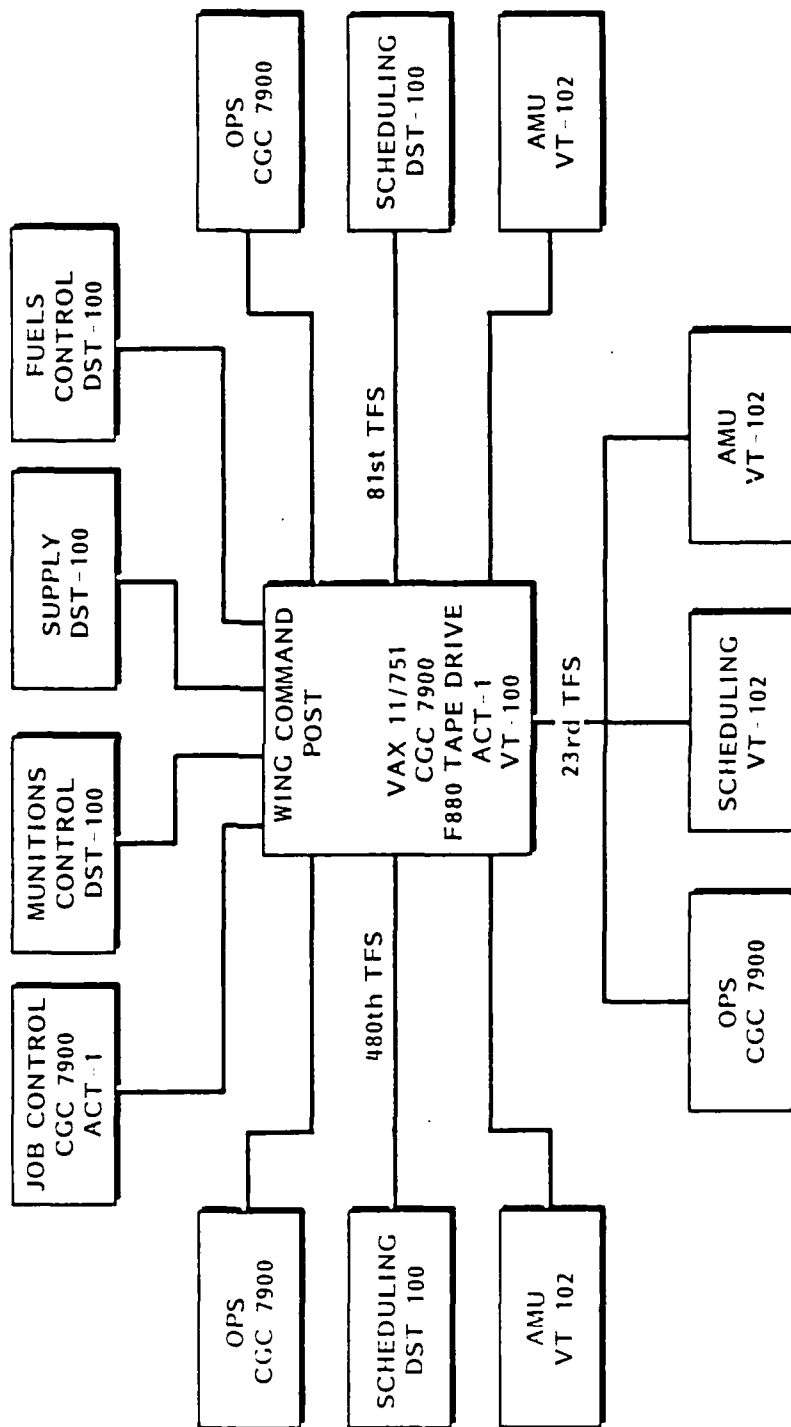
- INITIAL DIRECTION
- CONTRACT F49642-83-C-002?
 - SOW
 - CDRL
 - SEVENTEEN MODIFICATIONS (P00001-17)
- SUPPORT DOCUMENTATION
 - DPP
 - FAR (TAC, USAF, MAJCOM)
- TASK SCHEDULE DEFINITIZATION, APRIL 1984
- TASK SCHEDULE DEFINITIZATION UPDATE, OCTOBER 1984
- DIRECT CONTACT WITH USER/OPR/PMO

HARDWARE

- SPANGDAHLEM AB, GERMANY
- REMOVED AND DISSEMINATED
- RAMSTEIN AB, GERMANY
- REMOVED AND DISSEMINATED
- PENTAGON
- OPERATIONAL
- SOFTECH
- OPERATIONAL
- SELECTED LEASED EQUIPMENTS
- PROCURED

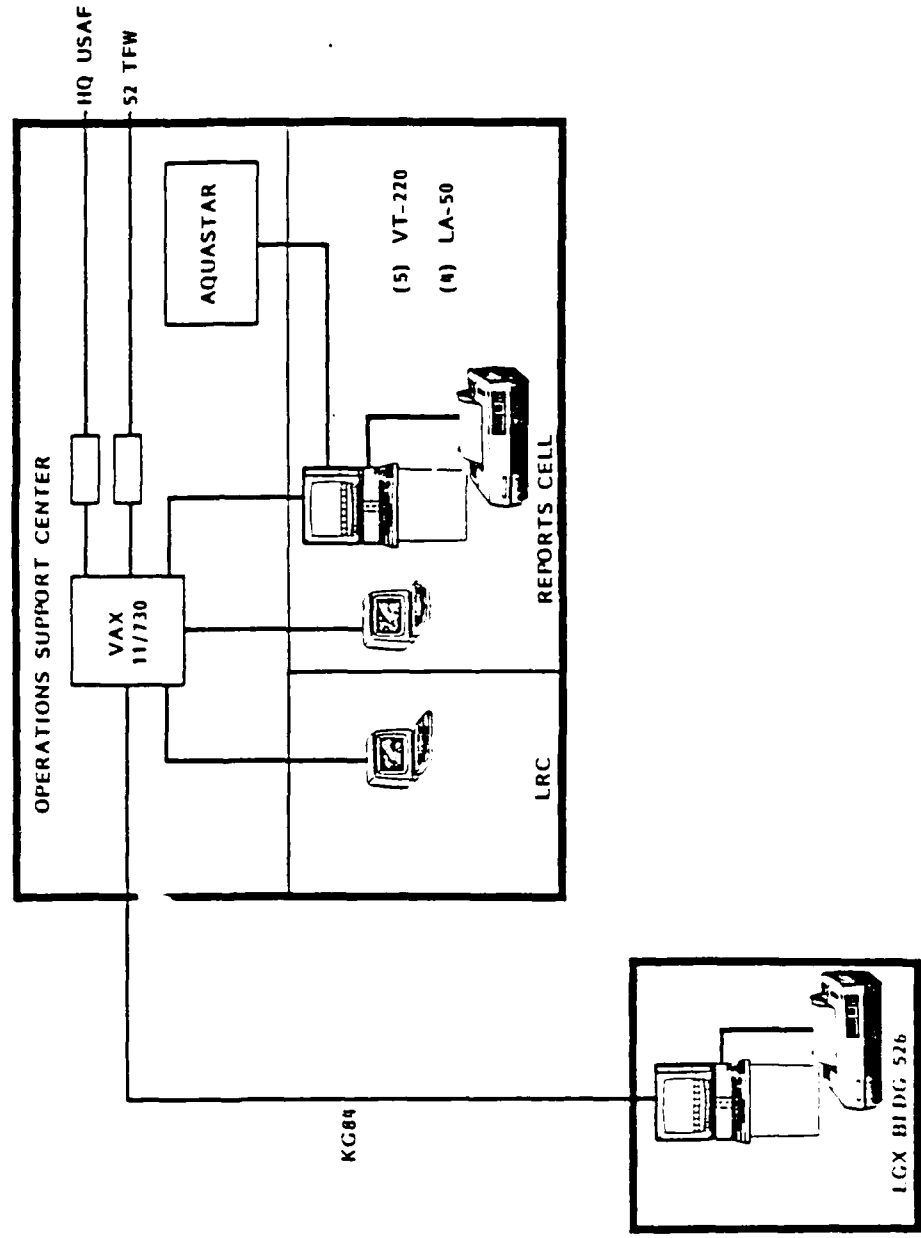
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HARDWARE PLANNED INSTALLATION SPANGDAHLEM

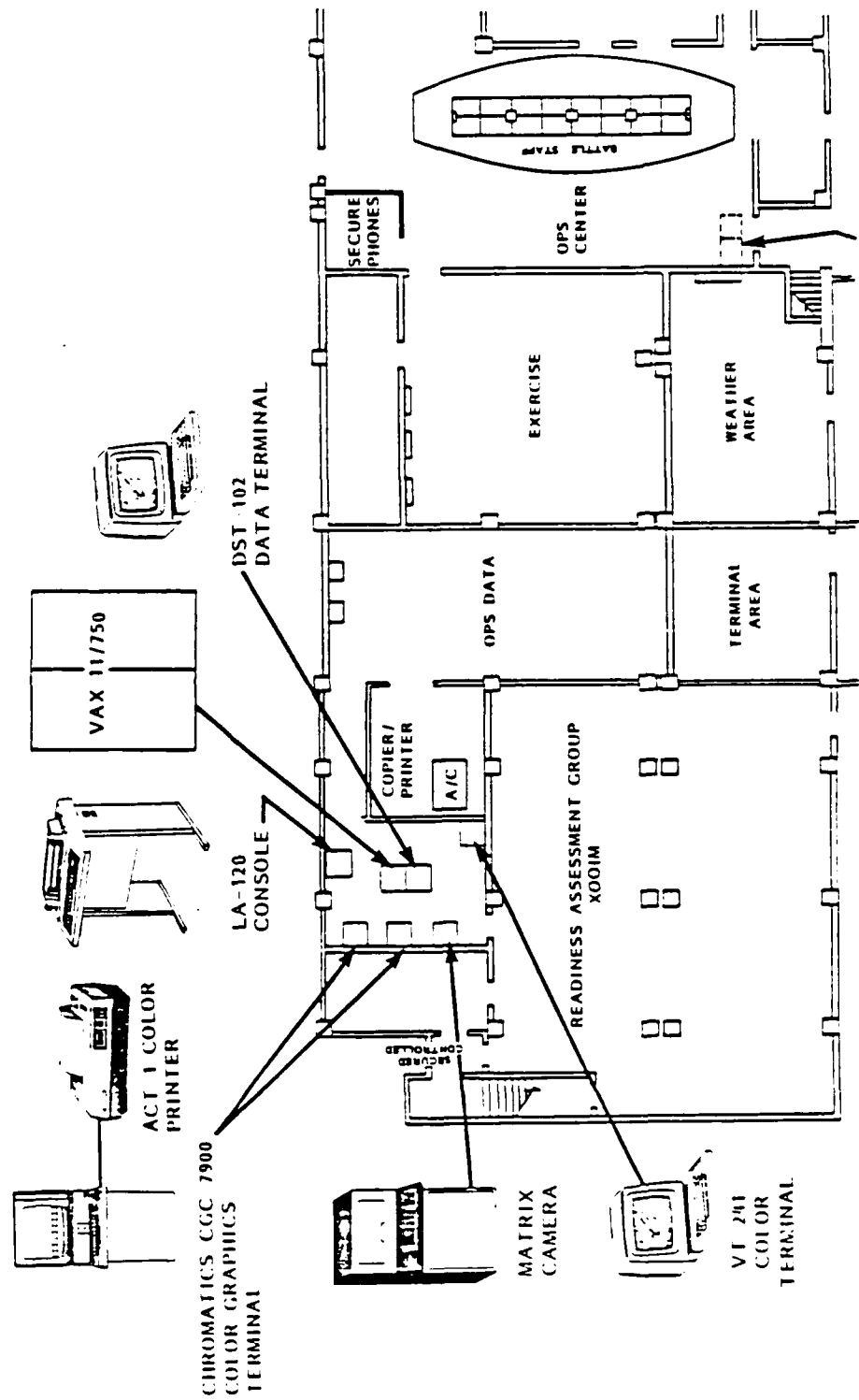


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HARDWARE INSTALLATION RAMSTEIN

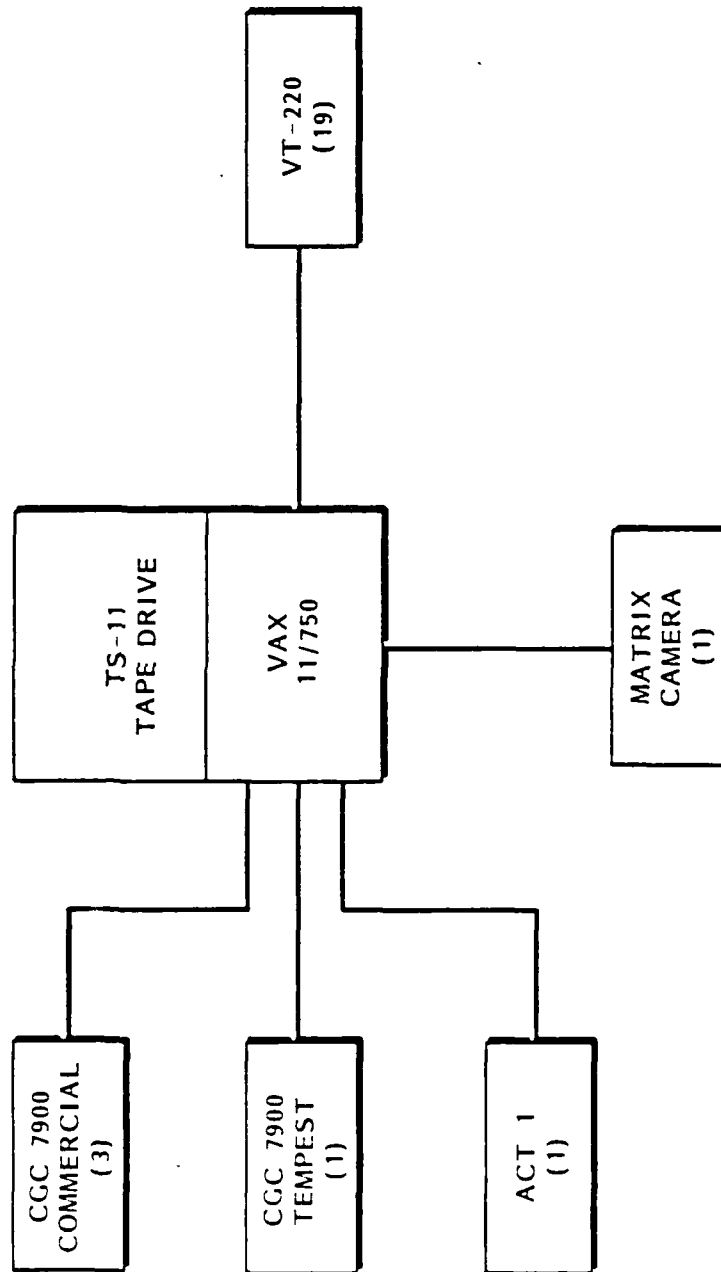


HARDWARE INSTALLATION PENTAGON



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HARDWARE INSTALLATION SOFTECH

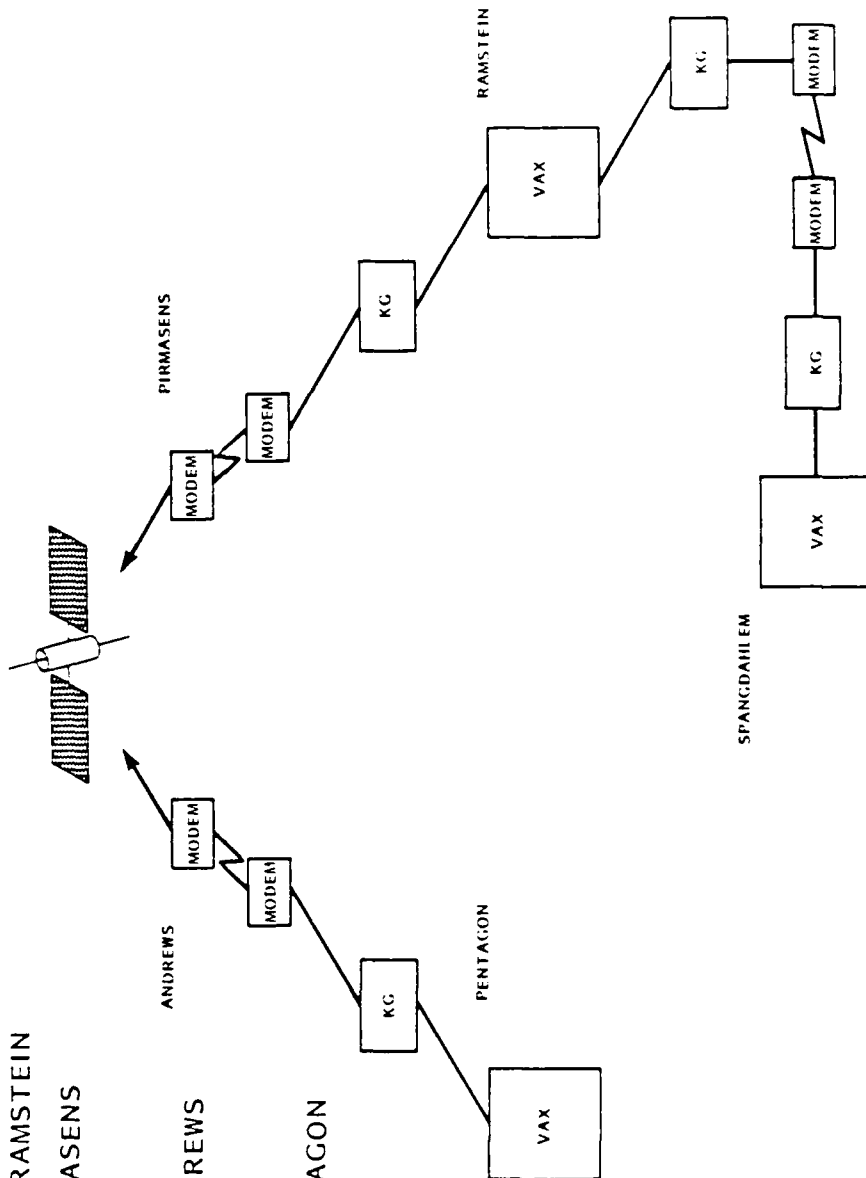


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AFIRMS INTERSITE COMMUNICATIONS

- MICROWAVE
 - SPANGDAHLEM TO RAMSTEIN
 - RAMSTEIN TO PIRMASENS
- SATELLITE
 - PIRMASENS TO ANDREWS
- LAND LINE
 - ANDREWS TO PENTAGON

U.S. GOVERNMENT SATELLITE



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SOFTWARE

52ND TFW	-	FIVE BUILDS (SB1, ..., SB5)
HQ USAF	-	TWO BUILDS (RB1, RB2)
HQ USAF	-	THREE BUILDS (PB1, PB2, PB3)

SPANGDAHLEM

- FIVE BUILDS
 - SB1, SB2, SB3 - COMPLETED 31 AUGUST 1984
 - SB4 - DELIVERED 2 NOVEMBER 1984; INSTALLED 13 NOVEMBER 1984
 - SB5 (FINAL) - DELIVERED 25 JANUARY 1985; INSTALLED 7 FEBRUARY 1985
- SCREENS
 - AIRCRAFT STATUS • POL STATUS
 - AIRCRAFT AVAILABILITY (PIE) • SUPPLY MICAP STATUS
 - AIRCRAFT AVAILABILITY (BAR) • TASKED MUNITIONS
 - MUNITIONS AVAILABILITY FORECAST • TASKED MISSIONS
 - AIRCREW STATUS • AIRCREW GENERATION
 - MUNITIONS STATUS • AIRCREW AVAILABILITY
 - FLYING SCHEDULE (MAINTENANCE) • BASE STATUS (INPUT/OUTPUT)
 - FLYING SCHEDULE (OPERATIONAL) • BASE STATUS (TABULAR, OUTPUT)
 - FLYING SCHEDULE FILE • UNIT STATUS (OUTPUT)
 - TASKING INFORMATION • INDIVIDUAL RESOURCE CAPABILITY

SPANGDAHLEM (CONT.)

- SCREENS (CONTINUED)
 - INTEGRATED CAPABILITY
 - AIRCRAFT TASKING
 - PROCESS STATUS
 - WAR MOBILIZATION PLAN
 - ORDER ASSIGNMENTS
 - WING OPERATIONS RATES
 - MISSION PROFILE DEFINITION
 - WING FLYING DAY
- RESUPPLY SCHEDULE
- WING RESOURCE SUMMARY (INPUT/OUTPUT)
- WING RESOURCE SUMMARY (OUTPUT)
- OPLAN/OPORD ASSOCIATIONS
- MUNITIONS CAPABILITY
- FUELS CAPABILITY
- BASE FUELS CAPABILITY
- CAPABILITY PERSPECTIVE

SPANGDAHLEM (CONT.)

- FUNCTIONS
 - RUN BASE/UNIT STATUS ROLLUP
 - RUN RESOURCE ROLLUP
 - TRANSMIT BASE STATUS
 - TRANSMIT UNIT STATUS
 - TRANSMIT RESOURCE STATUS
 - RUN SORTIE GENERATION MODEL

RAMSTEIN

- TWO BUILDS
 - RB1 - DELIVERED 2 NOVEMBER 1984; INSTALLED 13 NOVEMBER 1984
 - RB2 - DELIVERED 25 JANUARY 1985; INSTALLED 5 FEBRUARY 1985
- SCREENS

• BASE STATUS (TABULAR, INPUT/OUTPUT)	• WING FLYING DAY
• BASE STATUS (TABULAR, OUTPUT)	• RESUPPLY SCHEDULE
• UNIT STATUS (INPUT/OUTPUT)	• RESOURCE UNIT PRICE
• UNIT STATUS (OUTPUT)	• WING RESOURCE SUMMARY (INPUT/OUTPUT)
• BASE STATUS MAP	• WING RESOURCE SUMMARY (OUTPUT)
• RESOURCE REALLOCATION	• OPLAN/OPORD ASSOCIATIONS
• INDIVIDUAL RESOURCE CAPABILITY	• DOLLARS TO READINESS ASSOCIATIONS
• INTEGRATED CAPABILITY	• DOLLARS TO READINESS FYxx
• AIRCRAFT TASKING	• DOLLARS TO READINESS FYxx-FYzz (POM)
• PROCESS STATUS	• DOLLARS TO READINESS - FUELS
• WAR MOBILIZATION PLAN	• MUNITIONS CAPABILITY
• ORDER ASSIGNMENTS	• FUELS CAPABILITY
• WING OPERATIONS RATES	• BASE FUELS CAPABILITY
• MISSION PROFILE DEFINITION	• CAPABILITY PERSPECTIVE

RAMSTEIN (CONT.)

- FUNCTIONS
 - TRANSMIT BASE STATUS
 - TRANSMIT UNIT STATUS
 - TRANSMIT RESOURCE STATUS
 - POST BASE STATUS - NONSELECTABLE DATABASE UPDATE
 - POST UNIT STATUS - NONSELECTABLE DATABASE UPDATE
 - POST RESOURCE STATUS - NONSELECTABLE DATABASE UPDATE
 - RUN SORTIE GENERATION MODEL
 - RUN DOLLARS TO READINESS MODEL

PENTAGON

• THREE BUILDS

- PB1 DELIVERED 31 AUGUST 1984
- PB2 DELIVERED 2 NOVEMBER 1984; INSTALLED 9 NOVEMBER 1984
- PB3 DELIVERED 25 JANUARY 1985; INSTALLED 4 FEBRUARY 1985

• SCREENS

- BASE STATUS (TABULAR, INPUT/OUTPUT) • WING FLYING DAY
- BASE STATUS (TABULAR, OUTPUT) • RESUPPLY SCHEDULE
- UNIT STATUS (INPUT/OUTPUT) • RESOURCE UNIT PRICE
- UNIT STATUS (OUTPUT) • WING RESOURCE SUMMARY (INPUT/OUTPUT)
- BASE STATUS MAP • WING RESOURCE SUMMARY (OUTPUT)
- RESOURCE REALLOCATION • OPLAN/OPORD ASSOCIATIONS
- INDIVIDUAL RESOURCE CAPABILITY • DOLLARS TO READINESS ASSOCIATIONS
- INTEGRATED CAPABILITY • DOLLARS TO READINESS FYxx
- AIRCRAFT TASKING • DOLLARS TO READINESS FYxx-FYzz (POM)
- PROCESS STATUS • DOLLARS TO READINESS • FUELS
- WAR MOBILIZATION PLAN • MUNITIONS CAPABILITY
- ORDER ASSIGNMENTS • FUELS CAPABILITY
- WING OPERATIONS RATES • BASE FUELS CAPABILITY
- MISSION PROFILE DEFINITION • CAPABILITY PERSPECTIVE

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PENTAGON(CONT.)

- FUNCTIONS
 - POST BASE STATUS - NONSELECTABLE DATABASE UPDATE
 - POST UNIT STATUS - NONSELECTABLE DATABASE UPDATE
 - POST RESOURCE STATUS - NONSELECTABLE DATABASE UPDATE
 - RUN SORTIE GENERATION MODEL
 - RUN DOLLARS TO READINESS MODEL

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SECURITY PLAN

- DEVELOPED BY SOFTECH
- APPROVED BY OPR/PMO/AFCSP0
- IMPLEMENTED BY SOFTECH/AF USERS
- INCLUDES ACCESS PARAMETERS/PROCEDURES
- APPROVED SYSTEM USE BY USAFE DAA AND AIR S. AFF

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SECURITY

- AFR 205 16
- SYSTEM HIGH OPERATION
 - HQ USAF (PENTAGON)
 - HQ USAF (MAJCOM)
- CONTROLLED MODE OPERATION
 - 52 TFW SPANGDAHLEM AB GE (WING)

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SECURITY

- CONTROLLED SECURITY MODE
 - AFR 205 16 1 AUGUST 1984
 - DAA DETERMINES HOW TO CONTROL ACCESS
 - LIMITED CAPABILITY FOR CONCURRENT OR SIMULTANEOUS ACCESS BY USERS HAVING DIFFERENT SECURITY CLEARANCES AND NEED TO KNOW
 - LIMIT CONCURRENT PROCESSING TO NO MORE THAN TWO CLASSIFICATION LEVELS ABOVE LOWEST CLASSIFICATION LEVEL
 - CONTROLLED SECURITY MODE - A MODE OF OPERATION WHERE INTERNAL SECURITY CONTROLS PREVENT INADVERTENT DISCLOSURE. PERSONNEL, PHYSICAL, AND ADMINISTRATIVE CONTROLS PREVENT DELIBERATE, MALICIOUS ATTEMPTS TO GAIN UNAUTHORIZED ACCESS. A SYSTEM THAT OPERATES IN THE CONTROLLED SECURITY MODE MAY SERVICE BOTH CLEARED AND UNCLEARED USERS. IF REQUIRED, IT MAY CONCURRENTLY SERVICE BOTH SECURED AND UNSECURED REMOTE TERMINAL AREAS.

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DOCUMENTATION

<u>CDRL</u>	<u>DUE</u>	<u>ACTUAL</u>
• SYSTEM STUDIES		
• CAMS	31 OCT	31 OCT
• LAN	30 NOV	30 NOV
• EIFEL	30 NOV	30 NOV
• EDS	28 DEC	28 DEC
• AFORMS SYSTEM INTERFACE DESIGN	31 OCT	2 NOV
• CFMS SYSTEM INTERFACE DEFINITION	31 JAN	31 JAN
• CFMS SYSTEM INTERFACE DESIGN	28 FEB	28 FEB

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DOCUMENTATION (CONT.)

CDRL	ORIGINAL/REVISED DUE DATE	ACTUAL
AFIRMS SYSTEM SPECIFICATION	31 MAY 85	20 JUNE 85
HQ USAF SUBSYSTEM SPECIFICATION	31 MAY 85	9 JUL 85
HQ USAF SUBSYSTEM SPECIFICATION	31 MAY 85	9 JUL 85
WING SUBSYSTEM SPECIFICATION	31 MAY 85	10 JUL 85
HQ USAF DATABASE SPECIFICATION	31 MAY 85	10 JUL 85
HQ USAF DATABASE SPECIFICATION	31 MAY 85	10 JUL 85
WING DATABASE SPECIFICATION	31 MAY 85	10 JUL 85
FUNCTIONAL DESCRIPTION	3 MAY 85/31 MAY 85	13 JUNE 85
DATA REQUIREMENTS DOCUMENT	3 MAY 85/31 MAY 85	31 MAY 85
TRANSFORMS AND MODEL DESCRIPTION	3 MAY 85/31 MAY 85	19 JUNE 85
ECONOMIC ANALYSIS	3 MAY 85/31 MAY 85	1 JUL 85
EVOLUTIONARY IMPLEMENTATION PLAN (DRAFT REWRITE)	26 FEB 85	26 FEB 85
EVOLUTIONARY IMPLEMENTATION PLAN	3 MAY 85/31 MAY 85	2 JUL 85
PRODUCT DESCRIPTION	26 APR 85/31 MAY 85	16 JUL 85

- DELIVERY DELAYS DUE TO INCREASED INTERNAL REVIEW AND QUALITY ASSURANCE EFFORTS.

TESTING/TRIALS

- DESIRED RESULTS
- DEMONSTRATE SYSTEM CAPABILITY
- EXERCISES
 - WINTEX 26 FEB - 14 MAR 1985
 - SALTY DEMO 29 APR - 17 MAY 1985
- ROLL-UP TEST 3 - 7 JUNE 1985
- SYSTEM OPERATIONS AND MAINTENANCE SUPPORT
- SOFTWARE
- HARDWARE

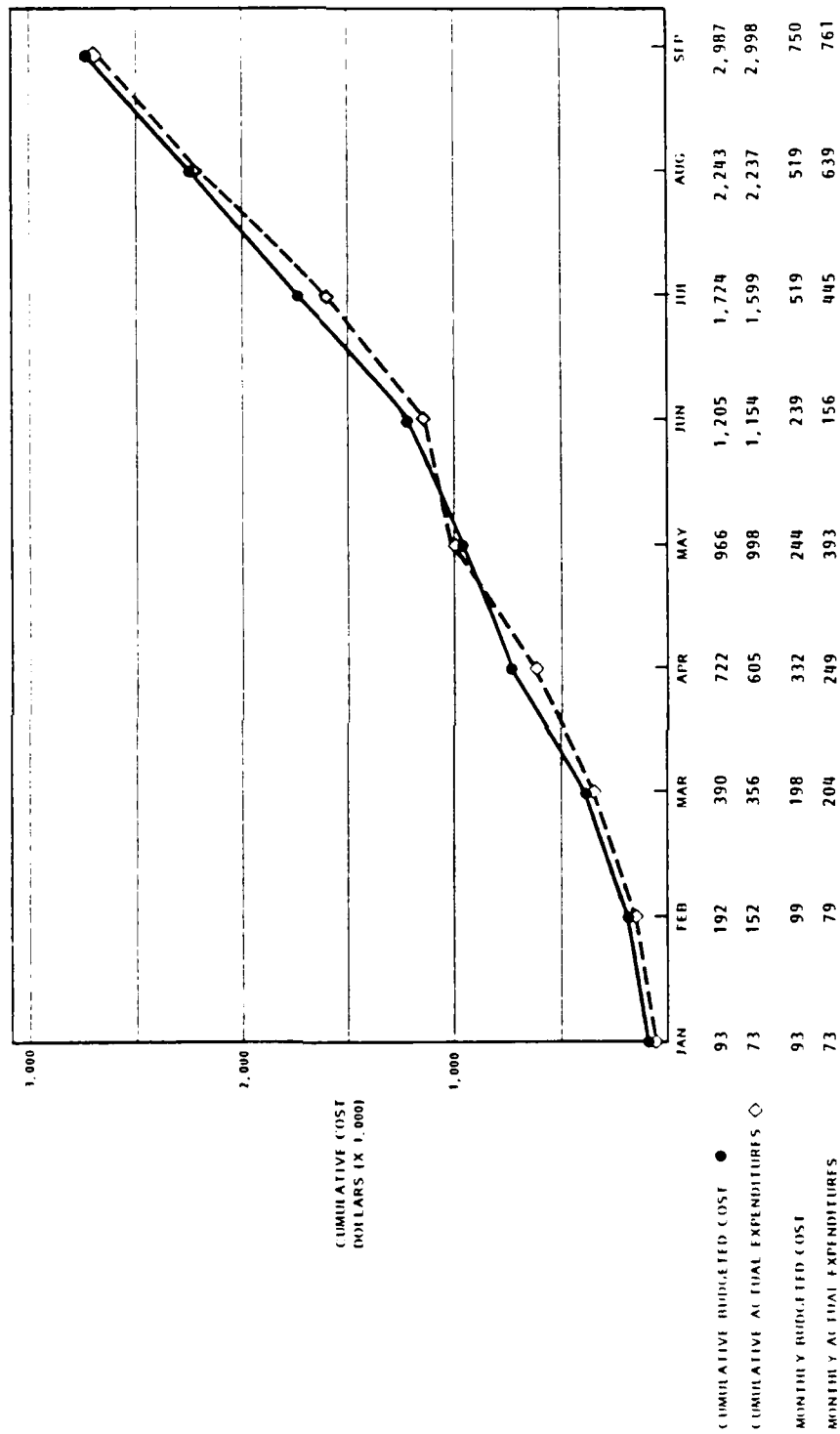
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EXERCISES

- WINTEX 26 FEBRUARY 14 MARCH 1985
 - 24 HOUR OPERATION
 - RAMSTEIN
 - PENTAGON
 - USER ASSISTANCE/TRAINING
- SALTY DEMO 29 APRIL - 17 MAY 1985
 - SPANGDAHLEM (24 HOUR OPERATION)
 - SALTY DEMO SUPPORT/MONITOR
 - RAMSTEIN (NORMAL DUTY HOURS)
 - PENTAGON (NORMAL DUTY HOURS)
 - USER ASSISTANCE/TRAINING

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AFIRMS FINANCIAL SUMMARY GFY '83

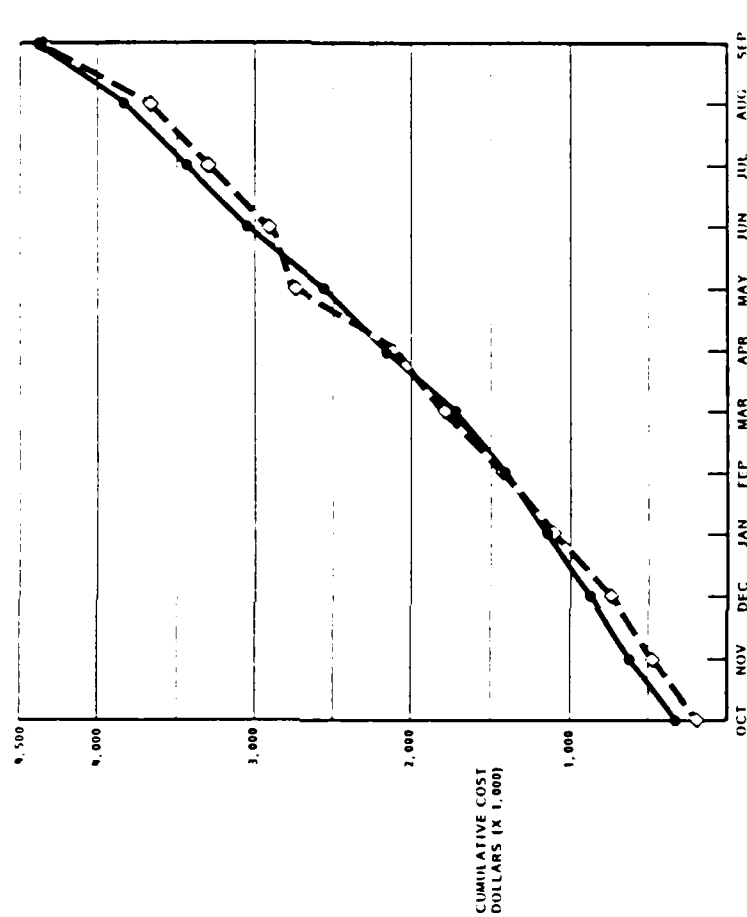


* These figures reflect the receipt of \$265,000 additional funding beyond the \$2,731,650 value of the initial contract

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AFIRMS FINANCIAL SUMMARY

GFY 84

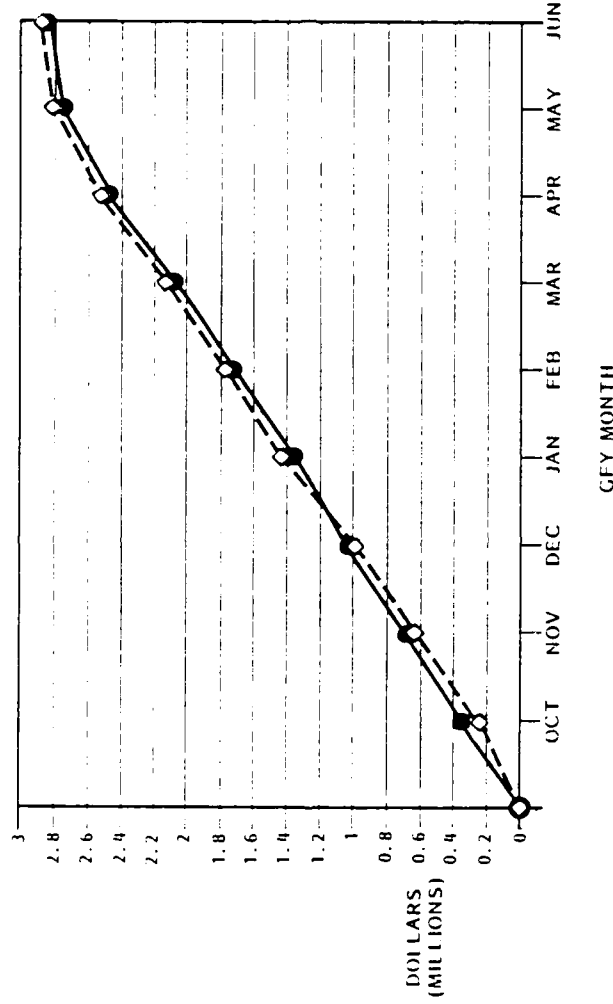


CUMULATIVE BUDGETED COST	●	307	611	880	1,172	1,438	1,716	2,156	2,563	3,045	3,445	3,811	4,385
	◇	182	498	747	1,118	1,463	1,797	2,146	2,630	2,957	3,327	3,660	4,384
DOLLARS (X 1,000)													
MONTHLY BUDGETED COST		307	304	269	292	266	277	440	407	482	400	366	574
		182	316	248	371	305	334	349	484	327	370	333	724
DOLLARS (X 1,000)													

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FINANCIAL SUMMARY

OCTOBER 1, 1984 - JUNE 6, 1985



CUMULATIVE BUDGETED COST ● 388 699 1,002 1,397 1,738 2,088 2,473 2,766 2,834

CUMULATIVE ACTUAL EXPENDITURES ◇ 308 615 990 1,418 1,776 2,151 2,534 2,803 2,843

MONTHLY BUDGETED COST 388 311 303 395 341 350 385 293 67

MONTHLY ACTUAL EXPENDITURES 308 307 375 428 358 375 383 269 40

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LPP ASSESSMENT

- CONCEPT VALIDATED
- CONFIRMED
- IMPORTANCE OF DIRECT USER INVOLVEMENT DURING DEVELOPMENT
- FEASIBILITY
- USEFULNESS
- IMPLEMENTATION APPROACH
- EVOLUTIONARY DEVELOPMENT
- PHASED AT EACH SITE/LOCATION
- COST/REQUIREMENT FLEXIBILITY

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PROTOTYPE LESSONS LEARNED

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INTRODUCTION

- LESSONS LEARNED FROM AFIRMS LPP
 - AFIRMS → WORLDWIDE IMPLEMENTATION
 - LEARNING PROTOTYPE → ?
- OBSERVATIONS/LESSONS LEARNED
 - FROM EXPERIENCE (ON AFIRMS)
 - FROM RESEARCH
 - FROM A TECHNICAL MANAGEMENT POINT OF VIEW
 - FROM A CONTRACTOR POINT OF VIEW
 - FROM A MILITARY PM POINT OF VIEW

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OVERVIEW

- WHAT IS PROTOTYPING?
- WHEN SHOULD IT BE USED?
- HOW SHOULD IT BE HANDLED?
- WHAT SHOULD I EXPECT FROM IT?

PROTOTYPING

- COMMON TERMS
 - RAPID PROTOTYPE
 - SPECIFICATION PROTOTYPE
 - OPERATIONAL PROTOTYPE
 - LEARNING PROTOTYPE

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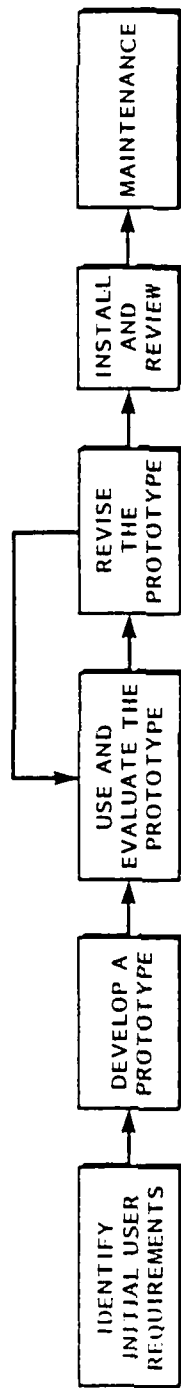
SIGNIFICANT CHARACTERISTICS

- PART OF LIFE CYCLE APPROACH
- SPECIFICATION PROTOTYPE
- LEARNING PROTOTYPE
- SUPPORT DESIGN SPECIFICATIONS WITH A WORKING PROTOTYPE
- REPLACEMENT FOR LIFE CYCLE APPROACH
- OPERATIONAL PROTOTYPE
- TRADE DESIGN SPECIFICATIONS FOR A WORKING PROTOTYPE

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PROTOTYPE VS. LIFE-CYCLE DEVELOPMENT

PROTOTYPING



LIFE-CYCLE



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WHEN TO PROTOTYPE?

- REQUIREMENTS UNCERTAIN
- OUTPUT UNCERTAIN
- HEAVY "USER DEPENDENT" SYSTEM
- PUSHING "STATE-OF-THE-ART"
- WHEN CONCEPT NEEDS "SELLING"

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HOW TO IMPLEMENT?

- REQUIRED PLANNING
- CONTRACTOR SKILL REQUIREMENTS

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VG 140740/44 7/19/85

REQUIRED PLANNING

- STRUCTURED APPROACH THAT ALLOWS FOR FLEXIBILITY
- CONSIDERATIONS
 - MASTER PLAN, GOALS AND MILESTONES
 - PRIORITIZED TASKING
 - PERIODIC UPDATES
- TAKE ADVANTAGE FROM LEARNING PROCESS

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SKILL REQUIREMENTS

- STRONG MANAGEMENT
- CLOSE INTERFACE TO CUSTOMERS
- MORE EXPERIENCED?

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EXPECTATIONS

- SYSTEM THAT IS EASIER TO USE
- SYSTEM THAT IS EASIER TO LEARN
 - TECHNICAL
 - MANAGEMENT
- MORE STREAMLINED SYSTEM
- LESS ROBUST SYSTEM
- GREATER PRODUCTIVITY?

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PRODUCTIVITY COMPARISON

- COCOMO METHOD
 - BARRY W. BOEHM, SOFTWARE ENGINEERING ECONOMICS, 1981
 - SEMI-DETACHED SOFTWARE
 - $MM = 3.0$ (KDSI) 1.12
 - $TDEV = 2.5$ (MM) 0.35
- LPP ACTUALS
 - 100 KDSI
 - DOES NOT INCLUDE COMMENTS

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PRODUCTIVITY

	COCOMO ESTIMATIONS	AFIRMS ACTUALS 1/83 5/85	HIGH PRODUCTIVITY 12/83 5/85
KDSI	100	100	100
EFFORT (MM)	521	535	361.5
PRODUCTIVITY (DSI/MM)	192	187	277
SCHEDULE (MONTHS)	22	29	18
AVERAGE PERSONNEL (FSP)	23.7	18.4	20

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CONCLUDING REMARKS

- EDUCATION IS IMPORTANT
- PROTOTYPING EXPOSES YOU TO CRITICISM
- PROTOTYPING CAN ACCELERATE SUPPORT
- PROTOTYPING YIELDS A "USER DESIGNED" SYSTEM AND ALL ACCOMPANYING BENEFITS
- PROTOTYPING HAS DISADVANTAGES
- HYBRID MAY BE A SOLUTION

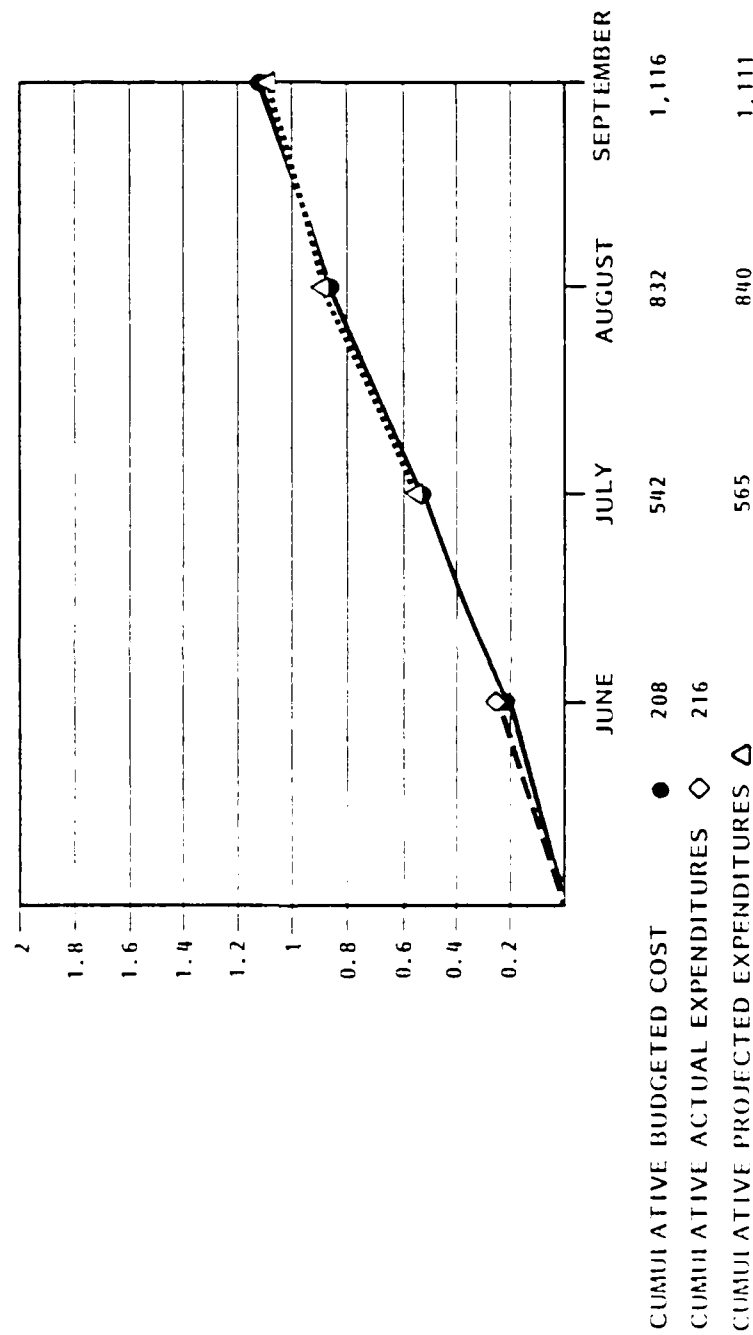
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POST LEARNING PROTOTYPE PHASE

- AFIRMS
 - SAC/MAC METRIC DEVELOPMENT
 - SAC/MAC REQUIREMENTS REVIEW
 - MANAGEMENT PLAN
 - WSMIS INTERFACE
 - WING ANALYSIS
 - LPP HARDWARE/SOFTWARE SUPPORT
 - ADMINISTRATIVE SUPPORT
 - BRIEFINGS
 - REPORTS
- INTEGRATED READINESS INFORMATION SYSTEM (IRIS)
 - ON/OFF PLANNING
 - CANCELLED 28 JUNE 1985
- AIR BASE SURVIVABILITY
 - CHECK LIST
 - REPORTS

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FINANCIAL SUMMARY JUNE 7 - SEPTEMBER 1985 WITHOUT ABS

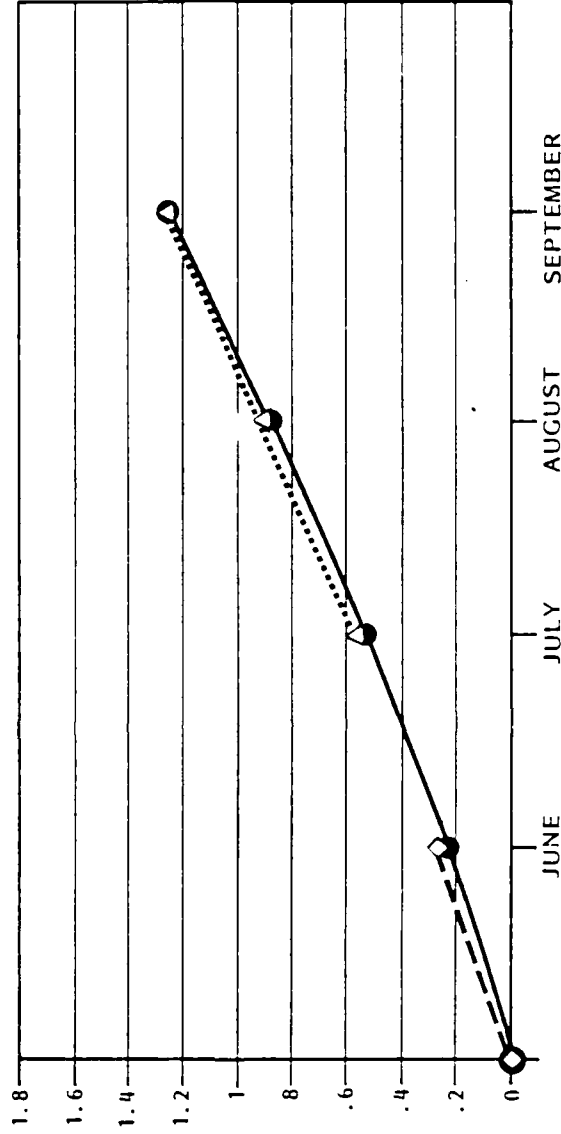


MONTHLY BUDGETED COST 208 334 290 284

MONTHLY ACTUAL EXPENDITURE 216 349 275

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FINANCIAL SUMMARY JUNE 7 - SEPTEMBER 1985 WITH ABS



CUMULATIVE BUDGETED COST	●	208	885	1,205
CUMULATIVE ACTUAL EXPENDITURES	◇	216	893	1,205
CUMULATIVE PROJECTED EXPENDITURES	△	208	325	320
MONTHLY BUDGETED COST		208	325	320
MONTHLY ACTUAL EXPENDITURES		216	310	312

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SUMMARY

- LPP IS SUCCESSFUL
- MAJOR ACCOMPLISHMENTS
 - USER INVOLVEMENT FOR TIMELY ACCURATE DATA
 - CONTROLLED MODE OPERATION (SECURITY)
 - EXERCISE SUPPORT /RESULT /REACTION
 - INTERSITE COMMUNICATIONS
 - DOCUMENTATION
 - PROTOTYPING KNOWLEDGE
 - ADAPTABILITY TO CHANGING REQUIREMENTS/PRIORITIES
- SHORTFALLS
 - END TO END TESTING
 - DOLLARS TO READINESS
 - DOCUMENTATION SCHEDULE
- MANY LESSONS LEARNED
 - PROTOTYPING
 - COMPLEXITY
 - LEAD TIMES
 - NETWORK OPERATIONS

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SUMMARY

- EVOLUTIONARY IMPLEMENTATION
 - TAKE ADVANTAGE OF TECHNOLOGICAL ADVANCE
 - FLEXIBILITY
 - CHANGING REQUIREMENTS
 - INTERFACE/INTEGRATION WITH NEW/EXISTING SYSTEMS
 - COST FACTORS
- VALIDATED
 - FEASIBILITY
 - USEFULNESS
 - NEED
- PROVIDED KNOWLEDGE BASE TO PROCEED WITH OPERATIONAL IMPLEMENTATION

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END

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